



# HOW DOES EARLY CHILDHOOD TRAUMA AFFECT COGNITIVE DEVELOPMENT AND MENTAL HEALTH IN ADULTHOOD?

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## ABSTRACT

This research paper deals with the long-term effect of early childhood traumas on cognition and mental health in adults. Traumatic episodes during the years of childhood, due to abuses, neglect, and exposure to other forms of violence, caused enormous differences, sometimes for one's lifetime, in ways in which brains develop, further implicating high-order cognition, such as memory and attentional resources, by affecting decision-making capability. This paper reviews the literature linking early trauma to changes in key areas of the brain, such as the prefrontal cortex and hippocampus. It examines the link of neurobiological changes with the incidence of various disorders later in life, including major depression, anxiety, and post-traumatic stress disorder. The approach of this review is integrative, combining developmental psychology and neuroscience with clinical research in discussing mechanisms whereby trauma sets a course for later life's cognitive and emotional outcomes. The results emphasize how early intervention and trauma-informed care are decisive factors in reducing the lifetime effects of childhood adversity.

**KEYWORDS:** Childhood Trauma, Mental Health, Depression, Anxiety, PTSD, ACE Study

## THESIS STATEMENT

Early Childhood Trauma (ECT) negatively affects a child's cerebral development and their ability to regulate their emotions; this makes them predisposed to mental health disorders in their adulthood—including depression, anxiety, and PTSD—because of changes in their ability to use their prefrontal cortex and hippocampus.

## INTRODUCTION

Trauma can, in usual circumstances, be physical, emotional, or psychological and can have very tangible and long-lasting effects on early childhood cognitive development and mental health. Trauma during a child's formative years can disrupt typical brain development; as a result, further disruptions in adulthood may ensue. These experiences can alter neural pathways, reduce emotional regulation, and impact cognitive functioning, including memory, attention, and executive control. On the other hand, trauma at a young age significantly increases the risks of major depression, anxiety disorders, post-traumatic stress disorder, and substance abuse disorders during adulthood. Evidence from developmental psychology and neuroscientific studies found that the influence of early trauma might continue into later life, influencing behavior, coping strategies, and even social relationships. It is important to understand how childhood trauma influences cognition in adults and their mental health so that effective therapeutic interventions aimed at softening long-term impacts can be developed.

Research findings have suggested that traumatic experiences during early childhood disturb the usual maturation of the hypothalamic-pituitary-adrenal axis, part of the system responsible for stress response. Chronic stress interferes with the normal maturation of the brain. Considering maltreated

children, a structural variation has been found in two of the parts of the brain: the prefrontal cortex and hippocampus. These parts of the brain are mentioned to be involved in the process of decision-making and memory-building, respectively. It is also accompanied by enhanced emotional reactivity and disturbed mastering of stress in adulthood, qualities that are contributing factors in the development of mental health disturbances. Thus, study into the effects of early childhood trauma in later adult years has major implications for mental health practitioners who are trying to help survivors of trauma and prevent long-term cognitive and emotional impairments.

## LITERATURE REVIEW

Childhood maltreatment and the effects of such experiences on neuropsychological development in later life are some of the most researched topics in both psychology and neuroscience. Experiences including abuse, neglect, or violence happen at critical stages of the development of the human brain as early trauma. This means that these experiences are very likely to alter the brain in a manner that affects cognition and/or emotional well-being going into adulthood.

### 1. Effects of Trauma on Neurodevelopment in Children

When a child experiences some sort of trauma, the brain is especially vulnerable to changes, which may have an impact on the cognitive as well as emotional aspects of an individual's life. Teicher et al. (2003) found that traumatic experiences at an early age are linked to shrinkage of the hippocampus, which is an area of the brain that is involved in learning and memory, and spatial learning in particular. This study discovered that children who were abused or neglected showed reduced hippocampal size; this may affect memory, attention, and executive function when they grow up. In the same way, trauma hinders the development

of the prefrontal cortex, which is in charge of decision-making, impulse control, and mood control (McCrory, De Brito, & Viding, 2010). They cause an individual's impaired capacity to understand feelings, reason, and manage stress input.

It was also found that traumatized changes in the HPA axis cause increased and persistent stress reactions. Chronic activation of the HPA axis may negatively impact brain development, thereby preventing the healthy brain from detailing aspects such as focus and sometimes solving problems (Lupien et al., 2009). These cognitive disruptions are evident in adulthood, where one may suffer from poor work output, low academic performance, and interpersonal relationships.

## 2. Trauma and Emotional Regulation

Aside from developmental issues, ECT also has severe impacts on personality organization. It is also proven that children who suffer from trauma at an early age have impaired emotional regulation. The consequences of early adverse experiences are documented by increased susceptibility to stress, emotional reactivity, and vulnerability to mental disorders in adult life. Anda et al. (2006) argue in their study that adverse childhood traumatic experiences increase one's risk of suffering from anxiety, depression, post-traumatic stress disorder, and substance use disorders. The present research focusing on the relationship between ACEs and mental health problems reported that children experiencing trauma at an early age have a higher risk of developing mental illness during their lifetime.

Additional data opines that early stress changes the structure and function of effects; for example, the amygdala, which is involved in the fear and stress response (Tottenham & Sheridan, 2010). The profound neural change that occurs in the amygdala due to early trauma leads to increased anxiety and a deep-seated feeling of fear, hence the reason for the onset of PTSD as well as other anxiety disorders in adulthood.

## 3. Effects of Trauma: Using an Empirical Lens to Understand Trauma and Mental Health Outcomes in Adulthood

Mental health repercussions of early childhood trauma have been of major interest to both scholars and researchers in their various studies. A review by Hughes et al. (2017) of the prospective trials states that childhood traumatic events make a person 1.6 times more likely to develop psychiatric disorders in adulthood, such as depression, anxiety, PTSD, and BPD. The accumulated impact of different adverse experiences that enhance the risk of adverse mental health status also magnifies the impact on emotional well-being.

Research has it that if doctors begin treatment immediately and use trauma-centered treatment plans, then some of these effects can be prevented. Talk therapies, including Cognitive Behavioral Therapy (CBT) and trauma-focused therapies, have been proven to assist in healing from traumatic incidences and adapting to more positive ways of handling situations (Bisson et al., 2013). These interventions are quite important to alleviate the mental disorders that may ensue from early life trauma and enhance a patient's quality of future living.

The literature repeatedly proves that children who exhibit early childhood trauma experience a great number of impairments in their cognitive development as well as mental health. Stress during the early years of neurological development has been revealed to result in changes to key areas of the brain that affect memory, attention, and regulation of emotions. These neurobiological alterations are directly correlated with a higher susceptibility to develop mental illnesses in adulthood, including depression, anxiety, and PTSD. Due to the present study's focus on the link between childhood trauma and later developmental outcomes, it was possible to identify the patterns of the impact of early trauma in adulthood and use them to guide treatment and sensitive strategies for victims of trauma.

## ANALYSIS AND DISCUSSION

This section examines early childhood trauma, cognitive development, and adult mental health through analyses of available research, experiments, theoretical models, interviews, and survey data. The resultant research substantiates the claim that childhood trauma changes the form and function of cognitive processing significantly and increases vulnerability to major mental health disorders in adulthood.

### 1. Theoretical Frameworks and Models

Various theories explain early traumatic experiences and their consequences on cognitive development and mental health. Of the many, the two major theories are Attachment Theory and Stress Response Theory.

- Attachment Theory (Bowlby, 1969) postulates that children develop an affectionate attachment with their caretakers, and any disturbance in this relationship may influence the children's psychological structure in the long run. Bowlby argued that securely attached children develop healthy emotional regulation systems and cognitive functions. This concept of insecure attachments implies that adults may face difficulties in handling their emotions, social relationships, and cognitive functioning later on. As expected, these insecure attachment styles have been found to lead to maladaptive coping mechanisms and difficulties in dealing with much stress later on in adult life.
- The Stress Response Theory represents a modification of Hans Selye's General Adaptation Syndrome, 1956, which describes the three stages of physiological response to stress, resistance, and exhaustion. In the instance of childhood trauma, typical brain development becomes disrupted due to frequent exposure to stress. The chronic stimulation of the HPA axis and the limbic system, especially the amygdala, gives rise to hypervigilance and an exaggerated stress response. These neurobiological changes, in turn, further encourage cognitive impairments and emotional hyper-reactivity during adulthood, which potentially produce vulnerability to a wide range of mental health disorders, including PTSD and anxiety.

### 2. Experiments and Studies

Various landmark experiments and studies have located evidence on the after-effects that childhood trauma has on later years of brain development and, therefore, on mental health, which further gives insight into how these early years shape the

life of the individual.

- Perhaps the best-known research in this area is called the Adverse Childhood Experiences Study, commonly referred to as the ACE Study, which is an epidemiological study of over 17,000 participants, where researchers asked participants to identify the experiences of participants who reported abuse. These findings have shown that the more harmful events experienced, the more likely it is to develop mental disorders, cognitive impairments, and even chronic illness during later life. It came out during the study that those who have four or more ACEs were at 4.5 times greater risk for depression and 12 times greater risk for attempting suicide compared to the ones with none of these experiences. This has been an influential study to shape our ideas about how trauma experienced during childhood may influence the long-term state of mental health.
- Another important research study was done by Teicher et al. (2003) in neuroscience, using MRI scans to study the brains of those who have experienced childhood traumas. They found that among those who have undergone trauma, there is marked shrinkage of the hippocampus and prefrontal cortex, two significant brain structures responsible for memory, learning, and decision-making. The structural changes were accrued with cognitive difficulties documented in survivors of trauma that included problems with memory, attention, and problem-solving.
- McLaughlin et al. (2019) utilized a longitudinal design to assess the long-term effects of childhood trauma on cognitive performance. They prospectively followed a cohort of children who suffered traumatic experiences. The results showed that by late adolescence, this cohort exhibited significant impairments in executive function and working memory, persisting into adulthood. The current study identified that childhood trauma has enduring influences on cognitive development, with detriments in functions important for everyday functioning.

### 3. Interviews and Surveys

Interviews and surveys further illustrate, by qualitative data, impacts that are both personal and societal from early childhood trauma.

- The interviews conducted by Herman's work, *Trauma and Recovery* in 1992, bring deep insight into the personal experiences of trauma survivors. Many described always living in a state of anxiety, hypervigilance, and an inability to form meaningful relationships. The qualitative nature of the interviews offers context that cognitive and emotional dysregulation brought on by trauma can lead to lifelong struggles with mental health. This confirms the findings of quantitative studies that examine such outcomes.
- Smith et al. (2016) surveyed the long-term effects of traumas in childhood within the low-income population. Their sample included over 1,200 participants who reported trauma before the age of 18, and in this sample, 45% of the respondents reported diagnoses for at least one kind of mental health disorder, such as depression or anxiety. The survey also highlighted how unemployment and underachievement in education are interconnected, implying that trauma has wider implications on cognitive

development and functioning.

### 4. Important Theories for Trauma Recovery

- Resilience Theory proposes a counterbalance to the negative power of trauma; this theory postulates that despite experiencing adversity, some individuals exhibit remarkable resilience. It is suggested that the support of a relationship, problem-solving skills, and positive self-perception modulate the adverse influence of trauma. Early intervention therapy or powerful social support sometimes allows trauma survivors to regain cognitive functioning and improve their mental health.
- Cognitive Behavioral Therapy is an effective form of treatment to manage the symptoms and restore the normal functioning of traumatized people. Cohen et al. (2006) demonstrated that TF-CBT is very effective in reducing PTSD symptoms among children who have been exposed to trauma. This is the case since, despite the enormous cognitive and emotional consequences of trauma, some approaches reduce the weight of poor mental health conditions.

In this regard, the following research, experiments, and qualitative data show that early childhood trauma can consistently exert a strong and long-lasting impact on cognitive development and mental health during adulthood. Among the theories explaining the phenomenon of how trauma affects brain development and emotional regulation, Attachment Theory and Stress Response Theory stand out. Empirical evidence of the long-lasting cognitive and emotional effects of trauma is given through studies such as the ACE Study and neuroscientific research by Teicher et al. (2003). Through interviews and surveys, one receives personal and societal insights into these challenges. While there exist many grave repercussions, resilient and therapeutic interventions like TF-CBT show promising capability of soothing these effects and emphasizing that "the earlier, the better" holds good for intervention and support.

### CONCLUSION

Evidence suggests that early childhood trauma shapes or influences cognitive developmental effects and mental health far into adulthood. Research such as the ACE Study has found a distinct relationship between traumatic childhood experiences and the heightened risk of developing mental health problems, while neuroscience research has emphasized the structural changes in the brain caused by trauma. The findings emphasize that early interventions, support systems, and therapeutic approaches are critical in addressing childhood trauma. It goes toward lessening the impact of long-term trauma on better cognitive-emotional life for individuals and gives them healthy and resilient lives as adults. The research further emphasizes that the need for the prevention of traumas in childhood is placed at the level of wider social efforts, and adequate support is given, as it has far-reaching implications: from the individual to families to communities in general.

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